TG: @Chalnaayaaar

Exercise - I (Conceptual Questions) Build Up Your Understanding

Structural Isomerism

1. $HC\equiv C-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_3$ & $CH_3-C\equiv C-\underset{\underset{CH_3}{|}}{CH}-CH_3$ are

(1) Chain isomer (2) Homologous
(3) Position isomer (4) None

2. Which of the following compound is isomeric with propanoic acid :-

(1) $CH_3-\underset{\underset{O}{\|}}{C}-OC_2H_5$

(2) $\underset{\underset{OH}{|}}{CH_2}-CH_2-\underset{\underset{O}{\|}}{C}-H$

(3) $CH_3-CH(OH)-CH_3$

(4) $CH_3O-CH_2-CH_2OH$

3. $CH_3—NH—C_2H_5$ and $(CH_3)_3N$ show which type of isomerism :-

(1) Position (2) Functional
(3) Chain (4) None

4. $CH_3-\underset{\underset{Cl}{|}}{CH}-CH_2-\underset{\underset{H}{|}}{C}=O$ and $CH_3-CH_2-CH_2-\underset{\underset{O}{\|}}{C}-Cl$

are constitute a pair of :-

(1) Position isomers
(2) Metamers
(3) Optical isomers
(4) Functional group isomers

5. The minimum number of carbon atoms in ketone to show position isomerism :-

(1) 3 (2) 4 (3) 5 (4) 6

6. Which are metamers :-

(1) $CH_3-O-CH_2CH_2CH_3$, $CH_3-O-CH\begin{matrix}CH_3\\CH_3\end{matrix}$

(2) $C_2H_5-O-C_2H_5$, $CH_3CH_2CH_2CH_2OH$

(3) $CH_3-O-C_2H_5$, $CH_3-CH_2-O-CH_3$

(4) $CH_3-\underset{\underset{O}{\|}}{C}-CH_3$, $CH_3-CH_2-\underset{\underset{O}{\|}}{C}-H$

7. Which similarity is necessary for isomerism–

(1) Molecular formula
(2) Structural formula
(3) Physical properties
(4) Chemical properties

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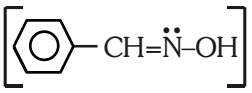
8. Number of structural isomers of C_6H_{14} is -

(1) 3 (2) 4 (3) 5 (4) 6

Geometrical Isomerism

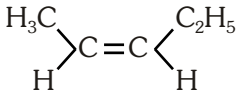
9. The isomerism shown by Benzaldoxime

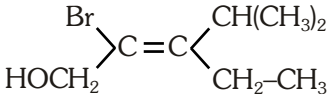


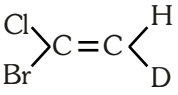
is :-

(1) Position (2) Functional
(3) Metamerism (4) Geometrical

10. Which of the following has Z-configuration :

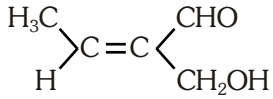
(1) 

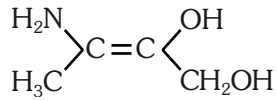
(2) 

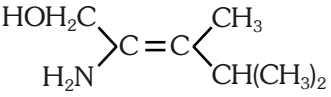
(3) 

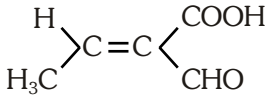
(4) All the above

11. Which of the following has E-configuration :-

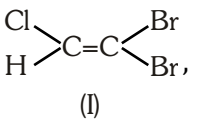
(1) 

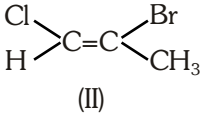
(2) 

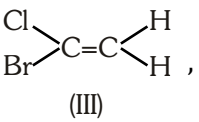
(3) 

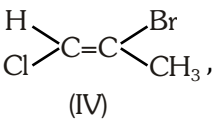
(4) 

12. Which is a pair of geometrical isomers :-


(I)

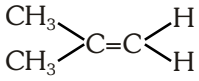

(II)

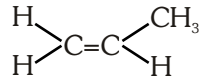

(III)

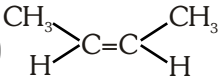

(IV)

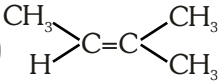
(1) I and II (2) I and III
(3) II and IV (4) III and IV

13. Which shows 'Geometrical isomerism' :-

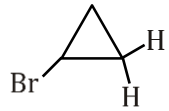
(1) 

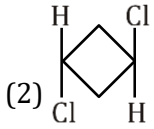
(2) 

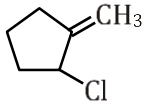
(3) 

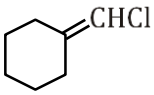
(4) 

14. Geometrical isomerism is shown by :

(1) 

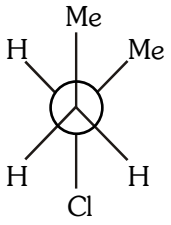
(2) 

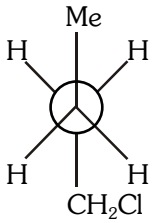
(3) 

(4) 

Conformational Isomerism

15. The pair of structures represents :-





(1) Chain isomer (2) Position isomers

(3) Conformers (4) None

16. Rotational angle require to get maximum stable conformer from minimum stable conformer in n-butane is :

(1) 360° (2) 180° (3) 120° (4) 240°

17. Which conformation of butane will have the minimum energy :-

(1) Gauche (2) Anti/staggered

(3) Eclipsed (4) None

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**3**	**2**	**2**	**4**	**3**	**1**	**1**	**3**	**4**	**4**	**4**	**3**	**3**	**2**	**2**
Question	16	17													
Answer	**2**	**2**													

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT-2009

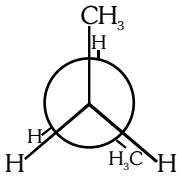
1. Which of the following compounds will exhibit cis-trans (geometrical) isomerism ?

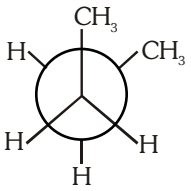
(1) 1-Butanol (2) 2-Butene

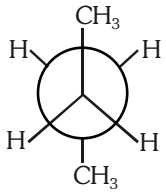
(3) 2-Butanol (4) 2-Butyne

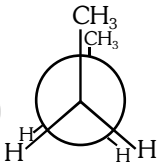
AIPMT-2010

2. In the following the most stable conformation of n–butane is :-

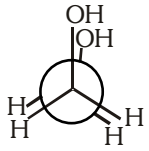
(1) 

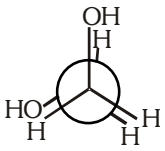
(2) 

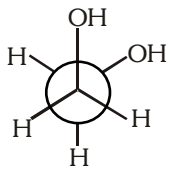
(3) 

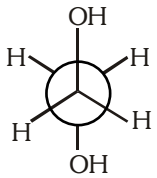
(4) 

3. Which of the following conformers for ethylene glycol is most stable :-

(1) 

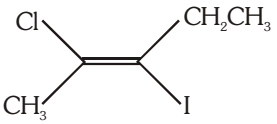
(2) 

(3) 

(4) 

AIPMT Mains-2011

4. The IUPAC name of the following compound



is :-

(1) cis-2-chloro-3-iodo-2-pentene

(2) trans-2-chloro-3-iodo-2-pentene

(3) cis-3-iodo-4-chloro-3-pentene

(4) trans-3-iodo-4-chloro-3-pentene

Re-AIPMT-2015

5. The number of structural isomers possible from the molecular formula C_3H_9N is :

(1) 2 (2) 3 (3) 4 (4) 5

NEET-I 2016

6. The **correct** statement regarding the comparison of staggered and eclipsed conformation of ethane, is :-

(1) The staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain

(2) The eclipsed conformation of ethane is more stable than staggered conformation, because eclipsed conformation has no torsional strain

(3) The eclipsed conformation of ethane is more stable than staggered conformation even through the eclipsed conformation has torsional strain

(4) The staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain.

NEET(UG) 2017

7. With respect to the conformers of ethane, which of the following statements is **true** ?

(1) Bond angle changes but bond length remains same

(2) Both bond angle and bond length change

(3) Both bond angles and bond length remains same

(4) Bond angle remains same but bond length changes

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NEET(UG) 2021

8. Dihedral angle of least stable conformer of ethane is :
(1) 120° (2) 180° (3) 60° (4) 0°

9. The compound which shows metamerism is:
(1) C_5H_{12} (2) C_3H_8O
(3) C_3H_6O (4) $C_4H_{10}O$

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9
Answer	**2**	**3**	**3**	**2**	**3**	**4**	**3**	**4**	**4**

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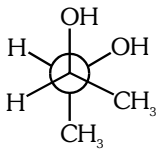
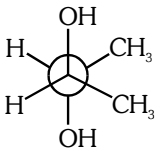
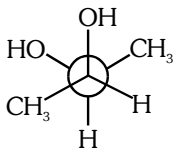
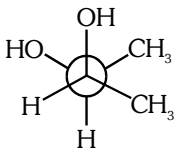
Exercise – III (Analytical Questions) Master Your Understanding

1. Which one of the following is the most stable conformation of 2, 3–butanediol :–

(1) 

(2) 

(3) 

(4) 

2. The minimum number of carbon atoms in ketone to show metamerism :–

(1) 3 (2) 4 (3) 5 (4) 6

3. Which of the following is not a metamer of $C_4H_{10}O$

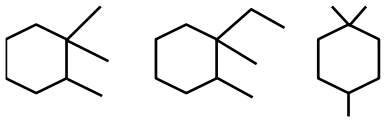
(1) Diethyl ether

(2) Methyl n-propyl ether

(3) 2–Methoxy propane

(4) Isobutyl alcohol

4. Which of these will exhibit geometrical isomerism?

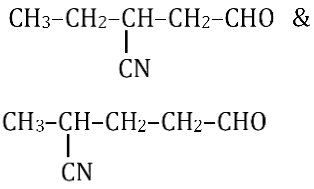


(I) (II) (III)

(1) I (2) II

(3) III (4) All of these

5. What is relation between following compounds



(1) Positional isomers (2) Chain isomers

(3) Optical isomers (4) Metamers

6. How many structures of aldehydes are possible for molecular formula $C_5H_{10}O$?

(1) 4 (2) 7 (3) 6 (4) 8

7. Given below are two statements:

Statement-I : $CH_3–O–C_3H_7$ and $H_5C_2–O–C_2H_5$ are metamers of each other.

Statement-II : Metamerism arises due to different alkyl chains on either side of the functional group.

In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Both statement I and statement II are incorrect.

(2) Both statement-I and statement-II are correct.

(3) Statement I is correct but statement II is incorrect

(4) Statement I is incorrect but statement II is correct.

8. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : In ethene rotation of one CH_2 fragment with respect to other interferes with minimum overlap of p-orbitals.

Reason : In ethene rotation absout carbon-carbon double bond (C=C) is restricted.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both **(A)** and **(R)** are correct but **(R)** is not the correct explanation of **(A).**

(2) **(A)** is correct but **(R)** is not correct.

(3) **(A)** is not correct but **(R)** is correct.

(4) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A).**

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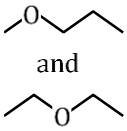
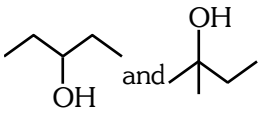
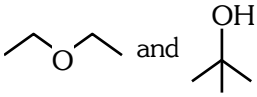
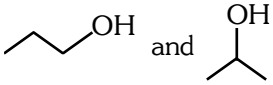
9. Match the column :-

Column-I (Compound)		**Column-II** (Isomeric relationship)	
(a)		(p)	Positional isomers
(b)		(q)	Chain isomers
(c)		(r)	Functional group isomers
(d)		(s)	Metamers

(1) a = s, b = p, c = q, d = r
(2) a = s, b = q, c = r, d = p
(3) a = p, b = q, c = r, d = s
(4) a = p, b = q, c = s, d = r

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9
Answer	**3**	**3**	**4**	**2**	**2**	**1**	**2**	**3**	**2**

TG: @Chalnaayaaar